Problem type 1:

Provide the context-free grammar that describes the following language:

> *(See variants below)*

a. **BYH**

   $L = \{(\mathbf{0} + \mathbf{1})^*\}$ (all strings) where $\Sigma = \{\mathbf{0}, \mathbf{1}\}$

b. **BYE**

   $L = \{\mathbf{0}^n\mathbf{1}\mathbf{0}^n | n \geq 0\}$ where $\Sigma = \{\mathbf{0}, \mathbf{1}\}$

c. **BYA**

   $L = \{\mathbf{0}^n\mathbf{1}^n | n \geq 0\}$ where $\Sigma = \{\mathbf{0}, \mathbf{1}\}$

d. **BYB**

   $L = \{\mathbf{0}^m\mathbf{1}^n | m \leq n\}$ where $\Sigma = \{\mathbf{0}, \mathbf{1}\}$

e. **BYF**

   $L = \{\mathbf{0}^m\mathbf{1}^n | m \neq n\}$ where $\Sigma = \{\mathbf{0}, \mathbf{1}\}$

f. **BYG**

   $L = \{\mathbf{0}^a\mathbf{1}^b\mathbf{2}^c | a, b, c \geq 0, a + b = c\}$ where $\Sigma = \{\mathbf{0}, \mathbf{1}, \mathbf{2}\}$

g. **BYD**

   $L = \{\mathbf{0}^a\mathbf{1}^b\mathbf{2}^c | a, b, c \geq 0, a + b \leq c\}$ where $\Sigma = \{\mathbf{0}, \mathbf{1}, \mathbf{2}\}$

h. **BYC**

   $L = \{ww^R | w \in \Sigma^*\}$ (all even length palindromes) where $\Sigma = \{\mathbf{0}, \mathbf{1}\}$